GOOD PRACTICES PRECEDING THE IMPLEMENTATION OF THE SYSTEM OF MANAGEMENT OF ENVIRONMENT, ON SMALL AND MEDIUM ENTERPRISES

Anca Atanase[1*], Ion Schileru[2] and Smaranda Vişan[3]
[1) 2) 3)]*Academy of Economic Studies, Bucharest, Romania*

Abstract
The current and future economic context compel to ample reconsiderations related to the volume and content of the demarches carried out by organisations, in order to face the competition sharper and sharper and the more and more numerous rigors, among which the issue of environment is more than imperative.
The good practices in environment management become more and more necessary and, fortunately, are supplied more and more often by organisations in SMEs category, which encounter highly valuable solutions in this context charged with convictions.
This work features an exemplary performance of a small organisation that managed to settle an informal system of management of environment, built up with much rigour, involvement, respect for society and environment.
The objectives of authors consist in offering good practices to business environment, from SMEs category, means of approaching in the analysis of environment practices and emphasizing the imperatives in this area of action, for organisations.
The method of research included the consulting of some lists of specialised works, documentary study in the sites of the organisations from SMEs category and of the organisations in the field, adopting some established models of analysis (FMEA - Failure Modes and Effects Analysis), singularised application of method to the data concerning an organisation from German space.
The results of authors' demarche were materialised in both theoretical and practical considerations, presumptively useful for the specialists in the field of environment management, university environment and business environment.

Keywords: good practices, environmental performance, SMEs, system of management, quality

JEL Classification: F18, L21, M14

* Corresponding author, **Anca Atanase** - atanase@com.ase.ro

Introduction

In close connection with the existence and purpose of business, an organisation wishes to have success on market, to have a sustainable development, and the result to involve economic efficiency, reflected in time saving and reduced costs.

In the current stage, the business environment tends to focus the market attention on those companies which prove to be able to harmonize the conditions of performance, environment and safety of activity with those imposed by its own activity. This desideratum is extremely important for the countries that have to confirm their status of member of European Union.

In the field of management systems, the statistics performed within the European bodies of certification presented the fact that the conditions imposed by market focused until currently on quality, on satisfying as complete as possible and more sustainable the direct and anticipated requirements of clients, this being the main criteria of competition. The current economic reality imposes, necessarily, the integration of a management system of an organisation and of the policies and objectives related to environment protection. In this respect, it must be proved permanently that environment conditions are met and that the organisations are continuously improved. Consequently, the interested parties must become more and more aware of the issues imposed by environment protection.

When setting forth the environment objectives, one must consider the major factors which influence environment. During the assessment, one may determine for which environment factors is necessary the elaboration of a crisis plan and the taking of some measures of prevention, respectively which needs regulations by actual disposals.

The risk factors in the activity of a company, important both in terms of environment and of security, depend on the safety of processes. In management, this is in relation of dependence with the supervision, control of environment influences, real determination of responsibilities. Thus, regulations and supervisions of processes are necessary, and a primordial importance have the competences of human factors, the qualification of work force, both professionally and in terms of the knowledge in the field of environment protection and safety of exploitation. One shall invest in the work force proportionally with the risk involved by the activity of each of them in this field. The qualification of work force must lead to the awareness of the risks of breaching the instructions, as well as of the gravity of consequences.

The correct interpretation of the requirements of the system of management of environment, the determination of the influences of environment factors, the assessment of the effects and environment performance intend to contribute to securing the reliability of management system.

The purpose of the demarche presented in article is to exemplify and prove that the identification and evaluation of environment issues and of the impacts on environment, integrated within a systematic view and applied to the entire system of management serve both to the improvement of organisation's image on market and to the prevention of negative influences on environment.

The preparation of organisations for implementation and certification of the system of management of environment is a complex duty, since they have to meet not only the

conditions of ISO 14001 standard but also the legal regulations, within a realistic plan of action.

For an organisation that wishes to have durable success on market, the purpose must not be the acquirement of certificate, but the skill to propose itself objectives, which it shall follow and the results of which it shall analyse for improvement of its own performances.

1. Essential aspects concerning the efficient systems of management of environment

The management systems militate in favour of active and involved people, which may formulate proposals of improvement and reach the objectives of improvement determined. Consequently, adopting a system of quality or environment management must be a strategic decision of the management on the highest level of organisation. It must assure of the fact that in the organisation it manages, operates an organisational culture.

The management staff of the organisation, applying the principles of management, supervises and analyses permanently the processes, identifies the non-conformities, analyses the risks and tendencies, proposes corrective or preventive measures, terms of fulfilment and assures the implementation of these measures, on the one hand, and, on the other, it checks the efficacy of the actions undertaken and measures the real level of the objectives formulated.

Applying the principles of quality management not only supplies direct benefits, but it also brings an important contribution to risks' management, the efficiency involving in this respect the management of costs and budgets.

The risks are inevitable, although they are unintentional and unwanted, representing effects and products of the processes of the system of management.

These undesirable results form the object of the procedure concerning the management of risks. The risks related to efficacy are materialised under the form of: non-conformities, respectively impacts on environment, whereas the risks concerning the efficiency under the form of: costs and budgets. This results in the interest of the managers from the highest level in the efficient systems of management.

The identification of risks/traps begins with the breakdown of processes in activities which may be easily planned, kept under control, analysed, whereas the improvement of performances (effects) is achieved by improving the work manner; frequently, these activities represent the sources of risks.

Improving the efficacy and efficiency of processes is performed by applying P-D-C-A methodology (Deming cycle: plan-do-check-act).

In order to be able to perform plans of improvement, the following should be analysed: audit reports of first, second or third part, the results of bench markings, the claims of clients, the non-conformities of products, according to the legal conditions or the amendments thereof, the financial performances, productivity, operation of equipments and human resources within the organisation.

The plans of corrective and preventive actions with improvement role should determine assignment of resources, the application of principles and of quality management tools, the

data analysis, the determination of priorities, of some new objectives and targets, continuous assessment and identification of tendencies, achieved permanently, intensively or extensively.

If measures of improvement are drawn up, these must be attached clear responsibilities, terms of implementation, in order to be possible to check and analyse their efficacy. However, the staff involved in improvement does not have only responsibilities, but also authority and associated resources.

The involvement of a higher and higher number of employees in identification-assessment and prioritization of environment issues represents one of the means by which it may be assured that the improvement of attitude towards environment becomes a life style for all.

The identification of the opportunities for improvement and the determination of new objectives and solutions lead to permanent improvement.

Traian Teodoru (2011b) reveals the following stages of the principle of approach based on a process applied to permanent improvement, specific to all systems of management (the characteristics of which are presented in table no. 1: analysis of problems, risks and tendencies, selecting the area of improvement and motivating it, determination of the conditions which define the actual situation, assessing the efficacy and efficiency of the existent processes; analysis of processes, identification of the causes of non-conformities, using for instance Ishikawa and Pareto charts; identification of the solutions of settlement by selecting the appropriate solution and assessing the effects of application of the selected solution; implementation and standardization of appropriate solution, which provides the expected results; assessing the efficacy and efficiency of application of the project of involvement, with a view to potentially extend it as well to other processes of the organisation.

Table no. 1: Characteristics of management systems

<table>
<tr><th colspan="2">Management system</th><th>Quality management system</th><th>Environment management system</th><th>Informal</th></tr>
<tr><td rowspan="2">Product</td><td>Believe in continuity of product manufacturing</td><td colspan="2">- Continuously achieved performance (established work mode = planned processes) on quality, environment (effectiveness)
- Improved, in order to increase stakeholder satisfaction, performance</td><td>- Achieved economic, financial benefits (efficiency)</td></tr>
<tr><td>Risk regarding</td><td>quality</td><td>environment</td><td>business</td></tr>
<tr><td rowspan="2">Method of</td><td>Product manufacturing</td><td colspan="3">Establishment and implementation/achievement of policies/objectives regarding the products, integrated with those of the company
Risk management</td></tr>
<tr><td>Improving the product</td><td colspan="2">Improving processes by using PDCA methodology</td><td>Valorisation of management methods</td></tr>
<tr><td rowspan="2">Standards</td><td rowspan="2">References</td><td colspan="2">Requirements</td><td>Guidelines</td></tr>
<tr><td>SR EN ISO 9001:2008</td><td>SR EN ISO 14001:2005</td><td>SR EN ISO 9004:2010
SR ISO 10014:2007</td></tr>
</table>

	Guidance	SR EN ISO 9000:2006; 10013:2007	SR EN ISO 14004:2010, 14031:2001	Specifications of managerial methods
(Management) Risks		SR EN ISO 19011:2003		
		The procedure of *identification, control and prevention of nonconformities*	The procedure of *identification and evaluation of environmental aspects (environmental impact)*	Self-assessment questionnaires level of maturity implementing basic principles management / key elements sustainable success
		SR ISO 31000:2010 – Risk management. Principles and definitions		

Source: adapted from Traian Teodoru, 2011b, p. 81

The sustainable success relies on the study of business environment, and permanent adjustment to it forms the object of the policy of the systems of integrated management.

We synthesize further on the recommended demarches to obtain sustainable success:

- assuring a perspective of planning on long term;
- constant supervision and periodical analysis of business environment;
- identification of all relevant interested parties, assessment of their potential impacts on business performances and the determination of the manner of fulfilment in a balanced manner of the needs and expectations identified and classified as such;
- constant involvement of interested parties and keeping them informed on its own activities and plans;
- establishing mutual advantageous relations with the suppliers, partners and other interested parties;
- harmonizing in a balanced manner the needs and expectations of the interested parties;
- identification of the risks attached on short/long term and carrying out a global strategy in order to reduce them;
- anticipating the future needs of resources (including of competence for the staff);
- determining the proper processes for the performance of business strategy, insuring that these are able to answer promptly to changing situations;
- periodical assessment of conformity to the current plans and procedures;
- undertaking appropriate preventive/ corrective actions;
- assuring the fact that businessmen have learning opportunities for their own benefit as well as for the maintenance of business vitality;
- determination and maintenance of the processes for innovation and permanent improvement.

2. Case study: **Clemens Härle company, of Leutkirch – Germany**

I have selected this case study for the rigour and logic of the demarches supported, and the stages followed are really useful for those who want to settle and certify the systems of management of environment, by EMAS (the EU Eco-Management and Audit Scheme) or ISO 14001.

The company Clemens Härle, of Leutkirch was granted in 2010 the award for environment of the land Baden-Württemberg from Germany.

2.1 Profile of Härle company

In the company Clemens Härle beer is being manufactured for over 40 years. Several local manufacturers are in a sharp competition, therefore the quality of beer must be irreproachable.

The manufacturers fulfil strict standards and norms of quality for food, applied as well to Bavarian beer plants. The raw materials, the malt and barley, are purchased only from farms controlled by two independent institutions.

The approximately 30 employees of the company Clemens Härle, included in a flexile organisational chart, are working both in production and sales.

2.2 Preoccupations of company for environment protection

The management is held by Härle family, which, for over 20 years, has been proving a constant interest for quality and environment.

It is notorious the management commitment for environment protection. A declared mission communicates the basic traits of the view and purposes of the team. The essence of the value asserted determines the purposes and responsibilities of the team. When the values and purposes are rooted in the culture of the team, its mission only presents them, so the parties involved and those interested are ready to act, having a clear understanding of the context of development of events. The principles generate correct attitudes and necessary to an increased efficiency, they dictate the manner of action.

A declared and constantly pursued purpose of the company is to perform a continuous improvement of environment.

The owners wanted to firstly assess by themselves their level and thus they drew up detailed reports of environment and studies of environment balance annually. Being a private, family business, they wanted a less formal system, less bureaucratic, less time consuming, as well as less expensive. For the beginning, they assigned around 4 % of the turnover for the assessment of environment performance (the equivalent of Euro 30.000 in 1995).

The company had as objective the reduction of the consumption of resources and took in this respect the following measures: a new boiling system of mash in the factory reduced the consumption of fuel for heating with 25 %, a system of heat recovery saves annually around 45.000 litres of heating fuel, the optimization of processes removed the

consumption peaks on electricity, whereas the water consumption was reduced with almost 50% in the last 20 years. The organic waste, resulted from the production processes, is reused in agriculture.

The support infrastructure consists in utilities for the supply of electric power and water, treatment of wastewater and return in the emissary, as well as the means for maintaining the technical equipments and of vehicles.

The finished products are store in the factory until the company carries them to clients using their own vehicle. All vehicles use organic diesel oil, refined from rape oil.

The problems related to sound solutions were managed by measures of noise reduction. All these measures were attached independent supervisions, in order to guarantee that noise levels on neighbouring properties are considerably lower than the legal limits of emission for noise.

The preoccupations for environment protection are intended to promote the company, being published periodically in media articles in this respect.

It is remarkable the attitude of the entire team related to transparent communication of its own performances concerning the environment towards the specialised bodies of control and the bodies of local public administration.

2.3 Determining the environment objectives

The study of environment balance in Härle Beer Factory involves the annual internal registration of all ingoings and outgoings of the flows of materials and power of the company.

The flow of ingoings includes: raw materials, auxiliary materials, packages (emphasizing those materials and packages with significant impact for environment), office and advertising materials, equipments, water and power, whereas the flow of outgoings includes: the wastewater, emissions in air, products and waste after production, semi-finished products, power consumed. These are registered systematically, in terms of a rigorous calendar, for the entire company, being the basic data for the support of indicators with a view to assess the environment performance.

The following significant environment issues were identified: water and power consumption, emissions in the air, effluents of waste water and solid waster, possible discharges of chemical agents from the cooling system, use of cleaning agents and disinfectants, purity/quality of water and raw materials.

The water and power consumption counts to a great extent for the costs of production and thus they are accurately analysed in terms of economic considerations.

The supervision of cooling system, as well as the use of cleaning agents and disinfectants is related to safety. The health of consumers must be guaranteed by regular supervisions in order to assure that water and raw materials fulfil the regulations for food safety.

In order to draw up environment objectives, it is thus necessary to identify the significant environment issues and to assess the impacts on environment, generated by these, in fact to assess the risks faced by company, in the field of environment.

Pursuant to data analysis, at Härle were identified three areas of action, which generate environment objectives:

- conservation of electric power and heat;
- orientation towards power sources more friendly with environment;
- use of some cleaning agents and professional disinfectants.

The hierarchy of such objectives present a high level of the performances of environment management and a focus on areas of essential future importance.

2.4 Undertaken criteria

The following tables present the manner of managing at Härle the most important issues of environment.

Since the management on the highest level is competent to take the strategic decision to implement a system of management of environment, undertaking the criteria for environment performance (presented in table no. 2) has a major importance.

Table no. 2: Criteria for environmental performance, undertaken by the management

Criteria for environmental performance	The management point of view
Legal requirements and other requirements	• Appropriate laws of the respective land regarding emissions protection, technical guides for noise, technical guides for regulations regarding air and dangerous substances • Compliance with legal requirements is assessed on regular basis.
Past and present performance	Reliable data are available at Härle, since water and energy consumption have been systematically recorded, since 1995
Standards and good practices of management	Although the certification of the environmental management system by EMAS or ISO 14001 is not an objective, their requirements are internally documented in the environmental report.
Data regarding performance, from the industrial organisations	Comparison with other breweries is a "craft tool" in the field of traditional brewing
Scientific research	Research results, in so far as relevant for small breweries, are used to determine the company objectives (eg: Beer manufacturing guide, issued by the Ministry of Environment)

Source: Deutsches Institut für Normung (DIN), 2005, p. 13

The assessment of environment factors, mainly in the cases which involve complex activities concerning the effects on environment, involves team work.

Since sustainable success involves the identification of all relevant interested parties, the constant involvement of interested parties and keeping them informed on its own activities and plans, their observations related to the preoccupations of Härle company (presented in table no. 3) are especially useful.

Table no. 3: Comments from stakeholders regarding the company's environmental concerns

Stakeholders	Comment
Management representatives, employees	• The company's strategy varies between environmental issues awareness and environmental protection through the personal commitment of the executive director. • As it often happens in small companies, informal communication is preferred to official rules when it comes to employee suggestions • Special meetings on relevant environmental topics are held by the master brewer and head of supply.
Customers	The environmental interests and concerns of customers were identified through targeted, random surveillance actions of the individuals.
Suppliers	Discussions with suppliers establishing guidelines for the supply (the quality and source of raw materials, type of packaging used).
Banks, insurance companies	Building confidence through the environmental report.
Control and legislative bodies	A regular contact with the authorities is maintained.
Local community	A regular contact with those responsible is maintained.
Media (and advertising)	• Increasing public interest towards publishing information on environmental activities, giving interviews, reports and dissemination of company information in regional newspapers, national news agencies and magazines specialized in industrial and environmental activities.
Research institutes	Active participation in research projects.
Environmental groups and other organisations	Contact and exchange of information with environmental organizations and carrying out activities of common interest.

Source: Deutsches Institut für Normung (DIN), 2005, p. 14

2.5 Selection of indicators for the assessment of environment performance of the company

The environment report of the company presents expressly the objectives of environment performance at Härle. Most of environment objectives are orientated towards technical and organisational measures. Where possible, the objectives are expressed quantitatively.

The objectives concerning the power are: *qualitative objectives* (organizational/ technical): planning and scheduling the investment in a power and thermal plant and *quantitative objectives* (operational processes): improvement of electric efficiency within the entire company with at least 1 kWh per hectolitre of beer produced in the following three years.

The indicators of operational performance (IPO) derived from production control (for instance the consumption of water and power) and from the study of environment balance were selected and used directly in order to check the evolution to the agreed objectives.

The following IPO concerning the significant environment issues, expressed in absolute values, were compared for environment performance in the last 10 years:

- electricity used, in kilowatt hour per year;

- diesel fuel used, in litres per year;
- heating fuel used, in litres per year;
- water consumed, in cubic metres per year.

The absolute values were then related to the number of hectolitres of beer produced. Thus, it resulted an additional range of indicators related to IPO which were compared as well for a 10-year term. By this comparison and by the use of a graphical representation, the amendments in absolute values are easier to understand.

Here are a few examples of such indicators related to IPO:

- litres of heating fuel consumed per hectolitre of beer produced;
- kilowatts-hour of electricity used per hectolitre of beer produced;
- mega joules of natural gas consumed per hectolitre of beer produced;
- litres of diesel fuel consumed per hectolitre of total beer produced and other drinks;
- total water consumed in litres per hectolitre of beer produced;
- drinkable water used in manufacture, in litres per hectolitre of beer produced;
- non-drinkable water used for cleaning, in litres per hectolitre of beer produced;
- hectolitres of beer produced per cubic metre of water (in order to measure the efficiency of water use).

2.6 Analysis of data

The balance studies of materials and power needed few months of labour, using both external consultants and its own staff.

Before the study of environment balance, the data on emissions, waste of materials and on the losses of heat was not enough relevant. There is few qualitative data on the chemical composition and impact on environment of the materials used. The absent information was collected from external sources, mainly from suppliers.

An unusual characteristic of data collection at Härle is that the data on the volumes of ingoings and outgoings is taken not only for the entire process of beer manufacturing, but for each process separately. This means that it is possible to identify not only the quantity used from a certain material, but also when and where these substances were used or manufactured.

The detailed investigations for relevant process indicators involve much work, being very interested in a detailed assessment of operational performance and thus it will be continued the collection of data at least for water and electricity consumption for each process.

Theoretically it would be possible to be used the data registered and measured automatically from the neutralization system to identify exactly the volume of wastewater. This entails less work and it is much more practical to be used a differential calculation

(namely the water used minus the water used in manufacture, there were the error sources such as pluvial waters are considered).

The necessary time to register the data may be reduced by the use of the lists of verification which contain the systematization of data sources, including the location and stowing environment.

The analysis of data related to volumes and quantities indicated differences, since these were collected differently. For instance: some quantities were measured (water and electricity), other quantities were known exactly (for instance from invoices and recipes), whereas other volumes and quantities were calculated (for instance the emissions calculated from the consumption of fuel); on the other hand, some volumes and quantities were estimated in terms of the experience, for the processes included in the system of data collection (for instance the consumption of adhesive for labels).

The assessment of information revealed the constant increase of the consumption of electric power and the fact that it is significantly higher than in similar companies, this fact being caused by the manner of use of equipments.

It was determined that, passing from the heating with liquid fuel to that with natural gases, the emissions of carbon dioxide, nitric oxide and sulphur dioxide could be significantly reduced.

By analysing the information in the environment balance, related to relevant processes, it was possible to obtain an overall presentation of the areas where are used significant quantities of cleaning agents.

The results of assessment were used by the company Härle in the public relations. For instance, it was organised a press conference which was taken over in regional and national newspapers, as well as on radio.

The environment report was distributed to target clients, to visitors, authorities, power brokers and interested consumers. The results were also published in the journals of consumers and in those of environment.

Conclusions and proposals

The current economic situation changes the position of the approaches of companies from extensive to intensive. Small companies – SME are looking for highly rigorous formulas, laboriously thought, able to assure the maximum coherence of actions in the field of environment management, formulas which may be both non-expensive and as simple as possible, so the report effects/costs to be maxim.

Opposite to public sector's organisations and even the multinational ones, which possess significant means, distributed by orientated budgets, SMEs usually have limited means, the success of their actions having to rely on principles of management with few resources, prudence and care on wide horizons.

One demands analyses of tendencies, analyses of cost and intensive improvements, which involves a better planning and a management of the resources involved, maximum concentration, wise judgement and strategy.

On the top of all its preoccupations and efforts, the image of Härle company was improved by winning the prize of excellence in environment, offered by the Ministry of Environment from Germany, for the year 2010.

The demarche of company represented a new approach for the optimization of processes, mainly related to the use of water, power and transport, and contributed to the identification of a few measures of improvement, concerning waste management.

The potential discounts of costs identified, in case of water and power, as well as for some raw materials, auxiliary and operational materials, showed that it is possible that the indicators of assessment of environment performance to be related to costs, which suggests the need of extension of systematic management of costs and over environment costs.

The example of German company may bring advantages to other companies as well and thus the mediatisation wanted do not bring them only individual benefits, but it offers a hope formula to other contractors as well.

From the study performed on the company Härle We realise that it didn't use an established method to determine and prioritize the environment objectives, respectively FMEA. The importance and efficacy of this method is emphasized by authors such as Teodoru (2011a), which drafted a form operable in such situations, Stamatis (2003), which proposed the formulas for its application in practice, Omdahl (1988) being the one who defined that „FMEA is a technique used to identify, prioritize and eliminate potential failures from the system, design or process before they reach the customer".

Being a tool of risk management meant for designing products or processes, the authors of the article consider that FMEA (Failure Modes and Effects Analysis) method may be applied successfully in order to select the priorities and to identify the objectives, drawing up a form similar to table. 4 (Annex 1).

When applying such method, one must consider the work regime: normal, abnormal and of emergency and the criteria of assessment of impacts using an ordinal scale. We have selected the following hypotheses: normal work regime, three levels of criteria of assessment of the impact (extension, gravity, frequency), the scale with three steps for each criterion. Scores were determined empirically for each of these, as follows: for extension criterion (punctual = 1, local = 3, general = 5); for gravity criterion (low = 1, moderate = 3, major = 5); for the criterion of frequency or probability of occurrence (low = 1, average = 3, high = 5). The score (product of the three values) represents the indicator of consideration of the action followed as being in the situation of representing an environment objective (value over 27) or only a supervision aspect by operational control (between 9 and 27) or, respectively, of routine (under 9). For another work regime selected, the values of indicators vary

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Annex 1

Table no. 4: Risk Assessment Form at Härle Factory

No.	**Sources of environmental issues (Processes, activities, products) Environmental factors**	**Environmental issue EI (Cause)**	**Environmental impact (Effect)**	Impact Evaluation Criteria			Score **S = E x S x F**	Significance of environmental impact **NSF, SF, SFM**	Actions			Measures
				Extension **E**	Severity **S**	Frequency **F**			**routine**	**operational control**	**objectives**	
1	Activities for maintenance and cleaning the equipment and office	Disposal of detergents containing sewage, in the local sewerage	Use of the sewerage	3	3	3	27	SFM			X	Supply biodegradable detergents with low foaming
2	Washing of transport vehicles	The leak of washing solutions, dust and impurities in the drainage	The presence of washing solutions, dust and other contaminants in the drainage	3	1	3	9	SF		X		Washing the vehicles at specialized units
3	External internal lighting	Power consumption	Using natural resources	3	3	5	45	SFM			X	Using energy saving lightbulbs, moving towards more environmentally friendly energy sources
4	Packaging plastic, glass	The need for controlled storage, according to assortment type	The need to eliminate waste at the source	1	1	1	1	NSF	X			Availability of space and storage conditions

Source: adapted from an idea of Teodoru, 2011a, p. 44